

REMARKS

Entry Of Amendment

As Applicants are merely canceling Claim 15, it is respectfully requested that this amendment be entered and examined at this time. This will place the application in a better condition for allowance or appeal.

Applicants will now address each of the Examiner's rejections in the order in which they appear in the Final Rejection.

Claim Rejections - 35 USC §112

In the Final Rejection, the Examiner rejects Claims 1 and 5-17 under 35 USC §112, second paragraph, as being indefinite. This rejection is respectfully traversed.

In particular, the Examiner rejects Claim 15 as reciting silicon. While Applicants traverse this rejection, in order to advance the prosecution of this application, Applicants are canceling Claim 15 without prejudice or disclaimer.

The Examiner also states that the claims are indefinite as to how and where the ligand is bonded to the metal in the three dimensional network of metal and oxygen bonds and if the ligand is present in the argued network or not. The Examiner further rejects Claims 1 and 5-15 under 35 USC §112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. These rejections are also respectfully traversed.

More specifically, the Examiner contends that based on Applicants' prior response, the metal oxide "would be a particle (which is something more than a simple M-O bond in a compound)." Further, the Examiner contends that reference number 103 of the drawing appears to support the interpretation that the ligands are present on the outside of the particle but that the

wording of claim 1 implies the material has both oxygen and ligand bonds in the matrix. Applicants respectfully submit that independent Claim 1 (and those claims dependent thereon) is not indefinite, but rather, the claim clearly recites Applicants' intended invention. Applicants believe that the explanation below should remove the Examiner's uncertainty as to the claim.

For example, as shown in Figure 4 of the present application, it is readily understood by one of ordinary skill in the art that the compound 404, which includes a structure identical to 103, is prepared by a sol-gel method in the presence of an aluminum alkoxide having a ligand. Therefore, one skilled in the art would readily understand that 404 has a metal oxide matrix and that, in the present invention, the organic moiety is introduced not only onto the surface of the metal oxide but also to the inside of the metal oxide network.

In the present application, Applicants intend to claim in Claim 1 a hybrid material comprising a metal oxide matrix. The material claimed in Claim 1 possesses an oxygen bond because the material is a metal oxide matrix. Further, Applicants intend to claim in Claim 1 a metal oxide matrix to which a ligand is bonded. Hence, the material claimed in Claim 1 possesses a ligand bond in a metal oxide matrix. The wording of Claim 1 does not imply a metal oxide particle having a ligand(s) present on the outside of the particle. Instead, as the Examiner properly concluded, the wording of Claim 1 means a material having both oxygen and ligand bonds in the matrix. Therefore, Applicants do not believe that Claim 1 is indefinite as the Examiner's comments show that the Examiner properly understands that Claim 1 is directed to a material having both oxygen and ligand bonds in the metal oxide matrix.

While "metal oxide" is not specifically defined in the specification of the present application, the fact that a metal oxide has a three dimensional network of the metal-oxygen bond is very basic knowledge well known to those of ordinary skill in the art. Furthermore,

Claim 1 recites a metal oxide “matrix” (this term appeared in the claim as filed). One skilled in the art would understand that the metal oxide matrix of Claim 1 should not be regarded as a metal complex. Moreover, the drawings in the present application (e.g. Figures 1, 3, 4, and 5) would readily lead those of ordinary skill in the art to understand that the material claimed in Claim 1 is a metal oxide having a three dimensional network of the metal-oxygen bond. Further, it is clearly disclosed in the specification of the present application that the metal oxide matrix of the present invention is prepared by the sol-gel method using the corresponding metal alkoxide (see e.g. page 13, line 26 - page 15, line 19 of the substitute specification) in which a metal alkoxide is hydrolyzed and subjected to polycondensation. Since an aluminum alkoxide, for example, possesses three metal-oxygen bonds, one skilled in the art would understand that gelation takes place during the sol-gel process to result in the formation of a three dimensional network structure. Hence, the claim term “metal oxide matrix” in Claim 1 would be well understood by those skilled in the art, especially in light of the disclosure in the specification and drawings of the present application.

Therefore, it is respectfully submitted that the claims of the present application are not indefinite and clearly set forth the subject matter which Applicants regard as their invention. Accordingly, it is respectfully requested that the §112 rejections be withdrawn.

Claim Rejections - 35 USC §102

The Examiner also rejects Claims 1, 5, 13, 14, 16 and 17 under 35 USC §102(b) as being anticipated by Hironaka et al. (US 5,466,392). This rejection is also respectfully traversed.

More specifically, the Examiner contends that Hironaka “teaches a material having aluminum oxide chelated to 8-hydroxyquinoline” and that the “reference teaches the claimed material.” Applicants respectfully disagree.

As Applicants explained in their prior response, independent Claim 1 recites an organic-inorganic hybrid material comprising a metal oxide matrix, and Hironaka does not disclose or suggest a *metal oxide matrix*. The Examiner, however, states that “[t]here is nothing in applicant’s specification to limit the phrase ‘metal oxide matrix’ to the argued meaning.” Applicants respectfully disagree. As explained above, the claim term “metal oxide matrix” is clearly understandable by one of ordinary skill in the art from the disclosure in the specification and drawings and the knowledge of those skilled in the art.

While Hironaka may teach a metal complex, there is no disclosure or suggestion in Hironaka of a metal oxide matrix, as recited in the claim.

In addition, the Examiner cites col. 19, line 66 - col. 20, line 45 of Hironaka in support of this rejection. Applicants note that the term “bis(2-methyl-8-quinolinolato) aluminum oxide” appears in line 40 in column 20. The term “bis(2-methyl-8-quinolinolato) aluminum oxide” is indefinite. Aluminum exists as a trivalent cation but only two negative charges are provided by the mono-anionic ligand (*i.e.*, 2-methyl-8-quinolinolato). Applicants do not know what is the structure of “bis(2-methyl-8-quinolinolato) aluminum oxide.” However, it is noted that “bis(2-methyl-8-quinolinolato) aluminum oxide” is categorized as a “metal oxanoid” in line 34 of column 20 in Hironaka. A metal oxanoid appears to be different than a metal oxide. Hence, it appears that the reference fails to teach or suggest any metal oxide matrix.

Therefore, independent Claim 1 is not disclosed or suggested by Hironaka, and Claim 1 and those claims dependent thereon are patentable over Hironaka. Accordingly, it is respectfully requested that this rejection be withdrawn.

Conclusion

It is respectfully submitted that the present application is in a condition for allowance and should be allowed.

If any further fee should be due for this amendment, and/or extension of time please charge our deposit account 50/1039.

Favorable reconsideration is earnestly solicited.

Respectfully submitted,

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